This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representation of the original documents submitted by the applicant.

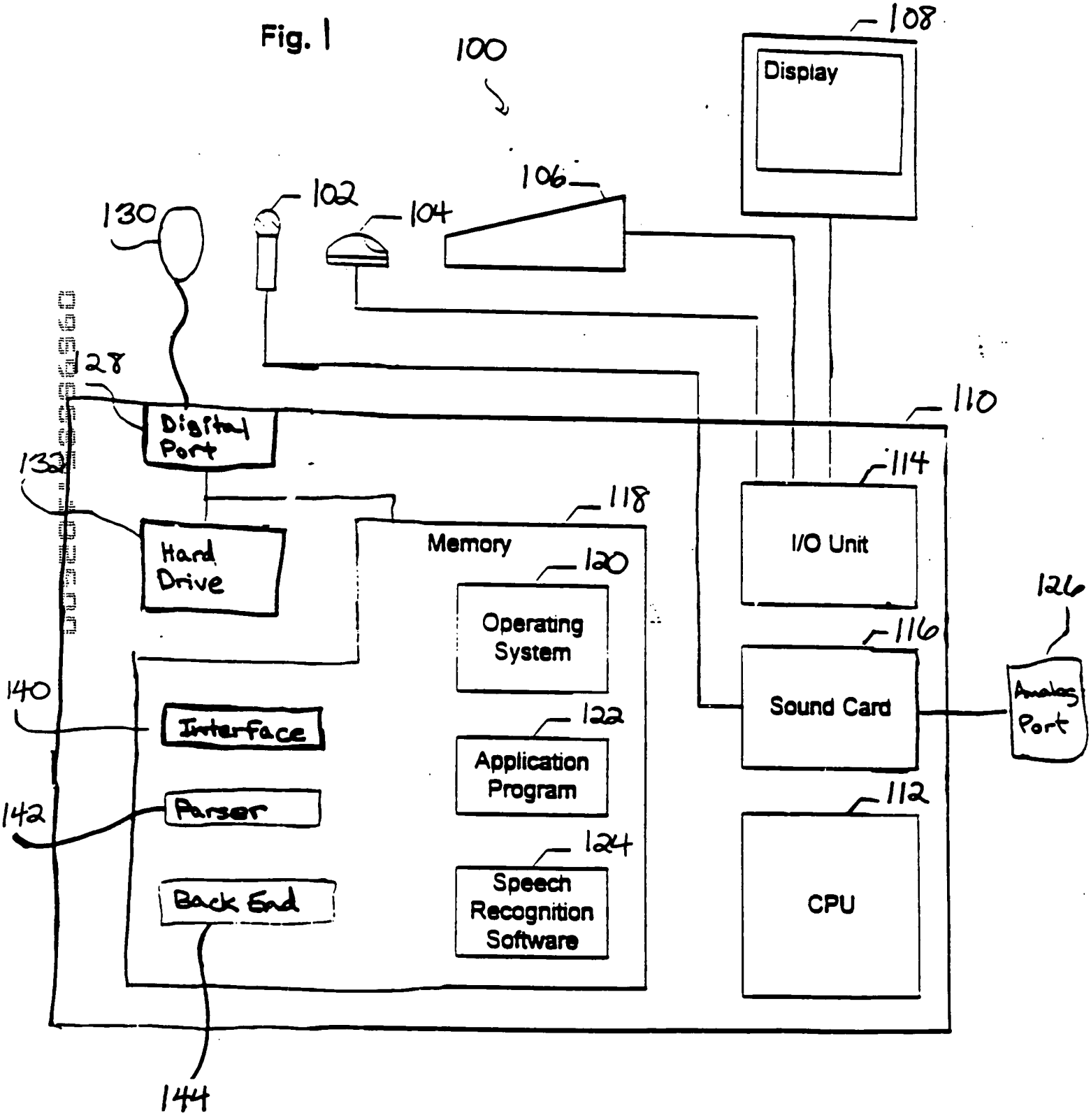
Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

Fig. 1


100
108
Display
106
102
104
130
128
Digital Port
110
132
114
I/O Unit
118
Memory
Hard Drive
120
Operating System
126
116
Sound Card
Analog Port
140
Interface
122
Application Program
142
Parser
112
124
Speech Recognition Software
CPU
Back End
144

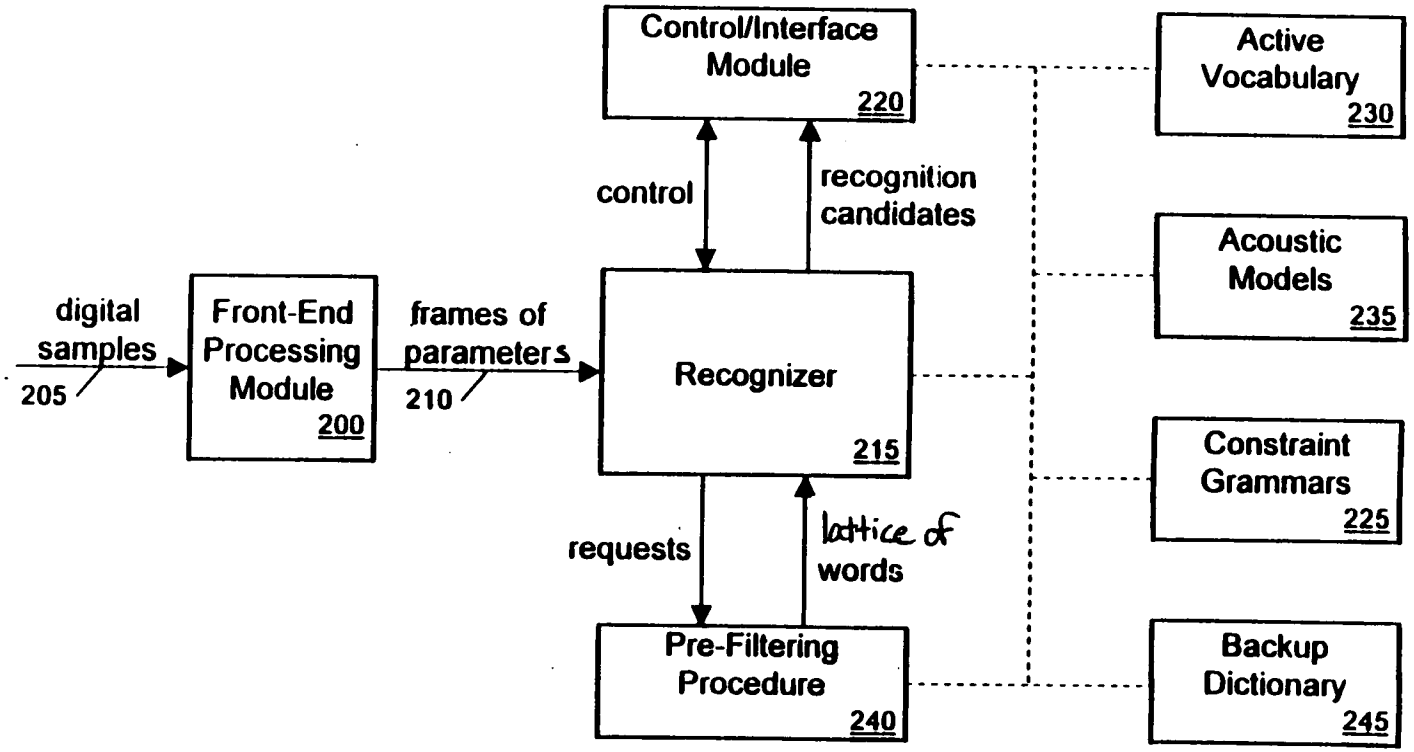

Control/Interface Module
220
Active Vocabulary
230
control
recognition candidates
Acoustic Models
235
digital samples
205
Front-End Processing Module
200
frames of parameters
210
Recognizer
215
Constraint Grammars
225
requests
lattice of words
Pre-Filtering Procedure
240
Backup Dictionary
245

Fig. 2

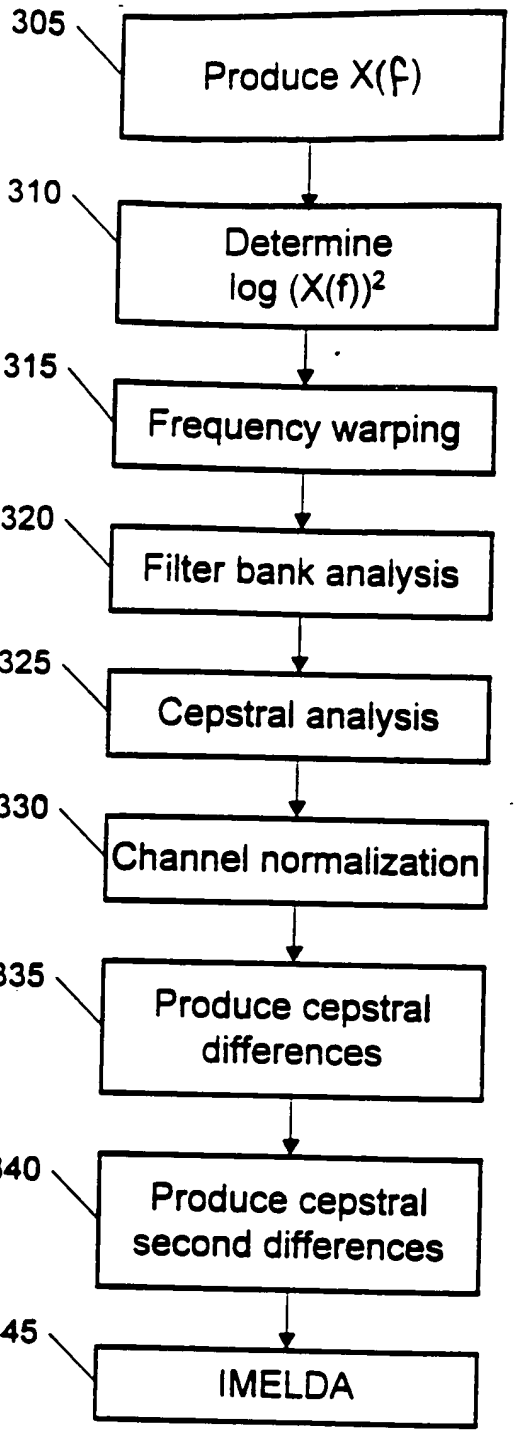

300
305
Produce X(f)
310
Determine
log (X(f))²
315
Frequency warping
320
Filter bank analysis
325
Cepstral analysis
330
Channel normalization
335
Produce cepstral
differences
340
Produce cepstral
second differences
345
IMELDA

Fig. 3

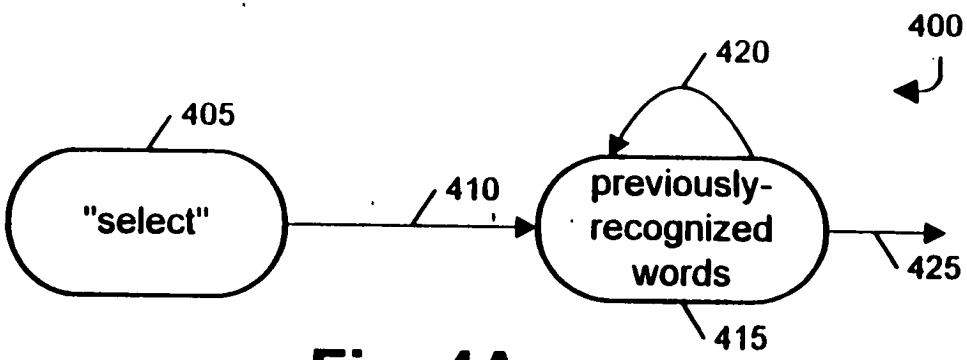

400
420
405
"select"
410
previously-recognized words
425
415

Fig. 4A

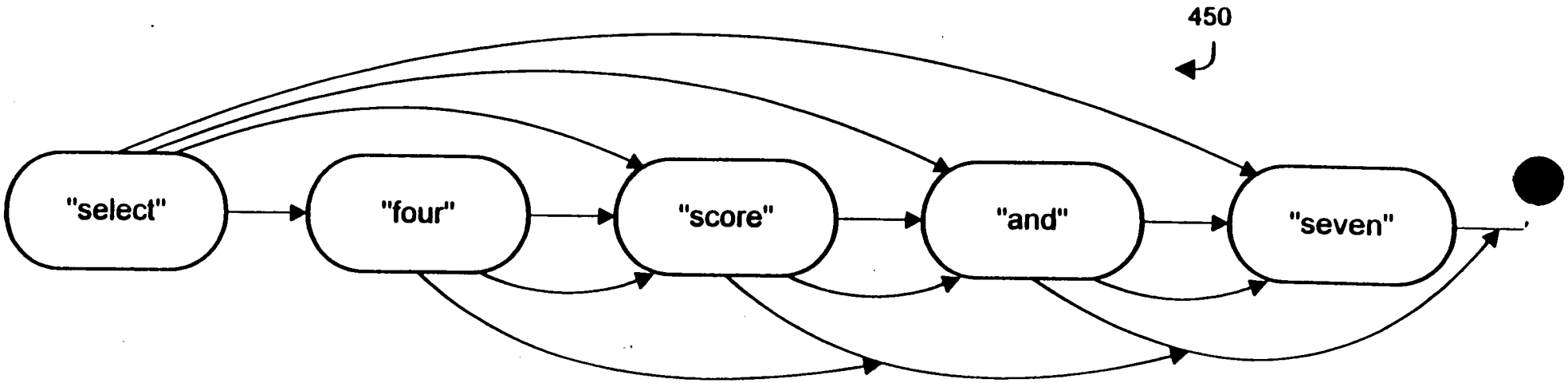

450
"select"
"four"
"score"
"and"
"seven"

Fig. 4B

DOCKET NO. 4-0003

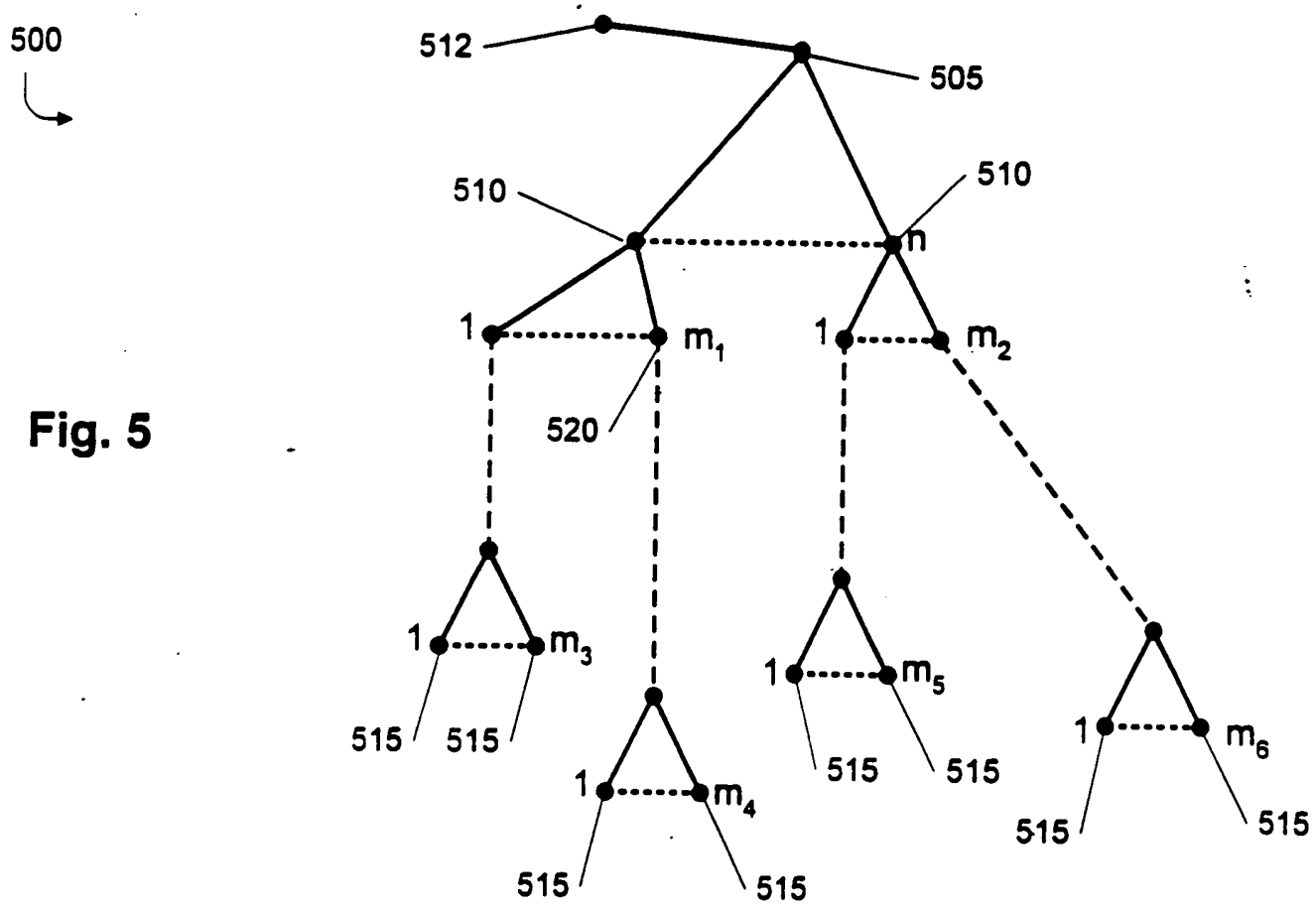


Fig. 5

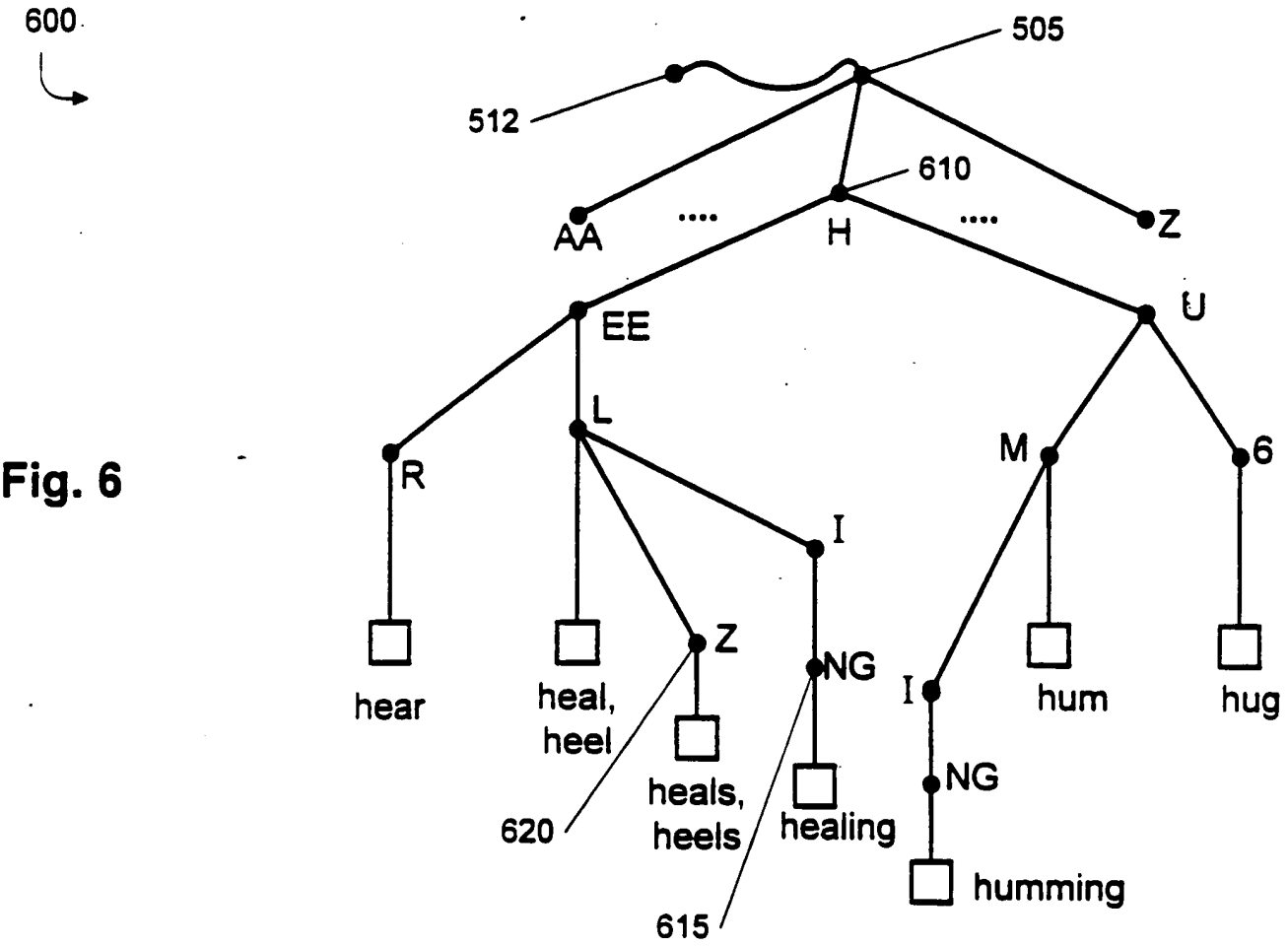


Fig. 6

09606605.4060303

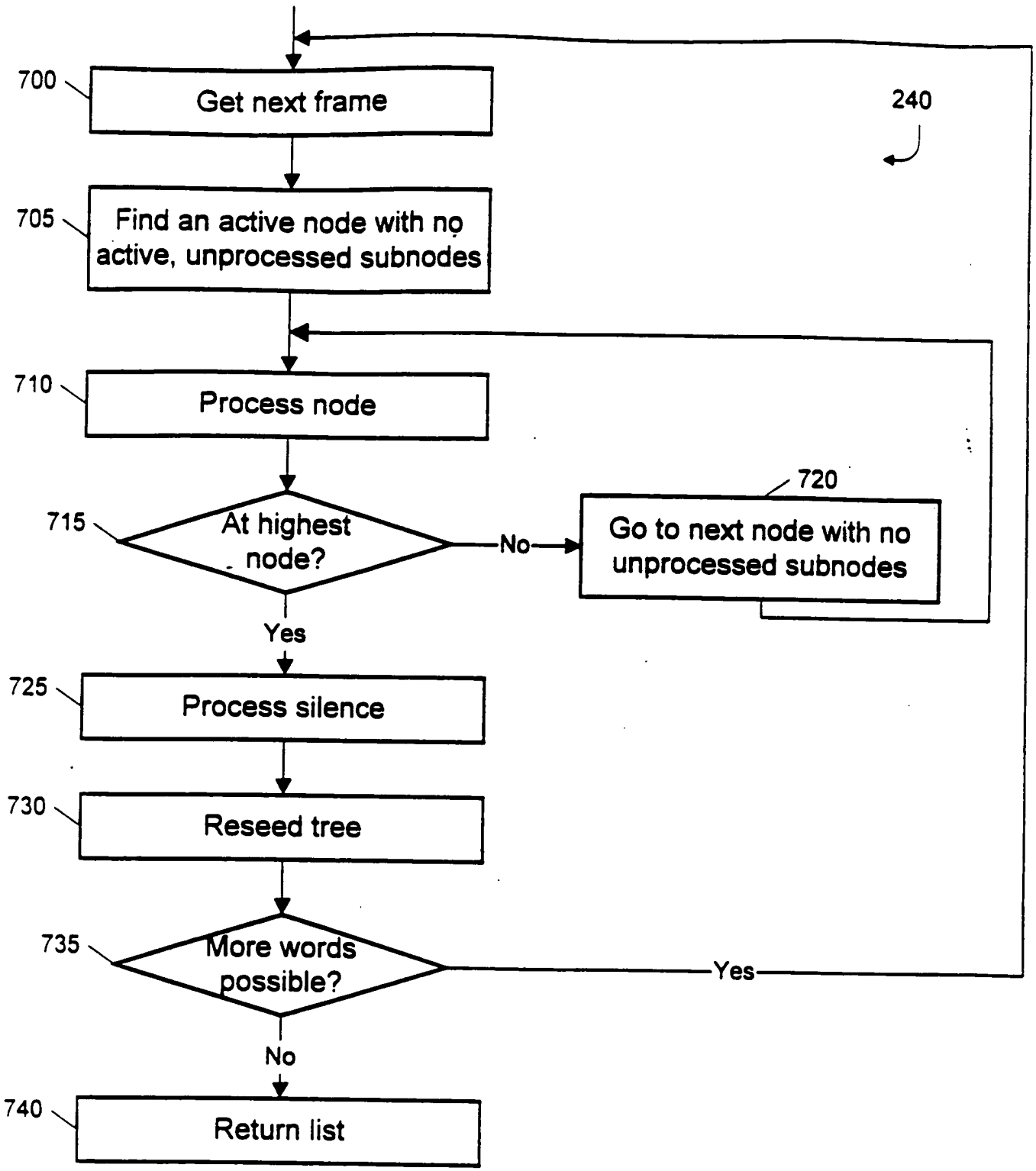

700
Get next frame
240
705
Find an active node with no active, unprocessed subnodes
710
Process node
715
At highest node?
No
720
Go to next node with no unprocessed subnodes
Yes
725
Process silence
730
Reseed tree
735
More words possible?
Yes
No
740
Return list

Fig. 7

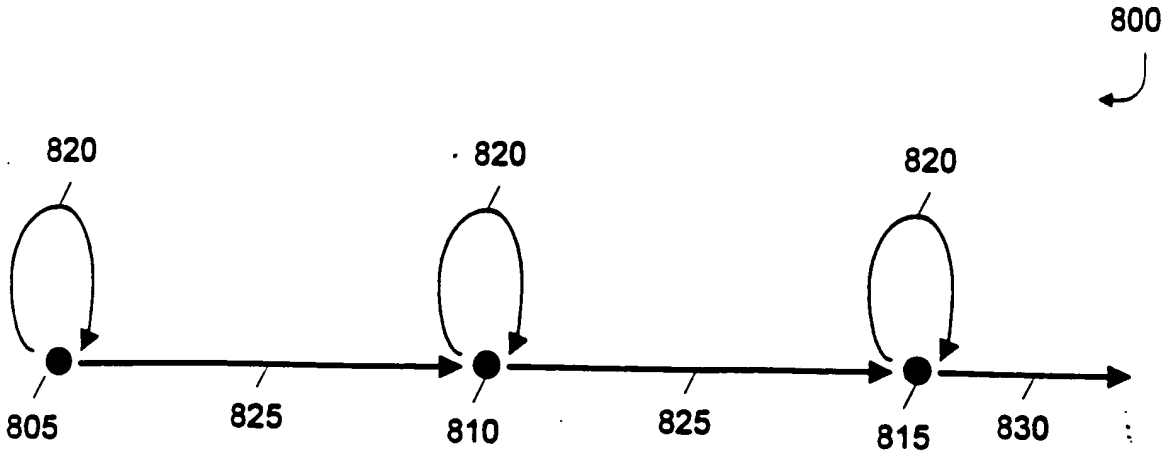


Fig. 8A

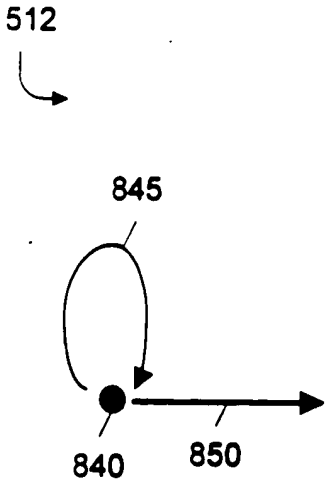


Fig. 8B

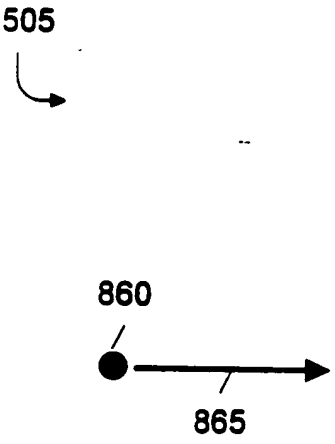


Fig. 8C

	Frame	840 ("A")	805 ("B")	810 ("C")	815 ("D")	Next Node ("N")
900	0	0	-----	-----	-----	-----
905	1	$S_{A1}=A_{A1}$	$S_{B1}=A_{B1}$	-----	-----	-----
910	2	$S_{A2}=S_{A1}+A_{A2}$	$S_{B2}=\min(S_{B1}+stay_B, S_{A1})+A_{B2}$	$S_{C2}=S_{B1}+leave_B+A_{C2}$	-----	-----
915	3	$S_{A3}=S_{A2}+A_{A3}$	$S_{B3}=\min(S_{B2}+stay_B, S_{A2})+A_{B3}$	$S_{C3}=\min(S_{C2}+stay_C, S_{B2}+leave_B)+A_{C3}$	$S_{D3}=S_{C2}+leave_C+A_{D3}$	-----
920	4	$S_{A4}=S_{A3}+A_{A4}$	$S_{B4}=\min(S_{B3}+stay_B, S_{A3})+A_{B4}$	$S_{C4}=\min(S_{C3}+stay_C, S_{B3}+leave_B)+A_{C4}$	$S_{D4}=\min(S_{D3}+stay_D, S_{c3}+leave_C)+A_{D4}$	$S_{N4}=S_{D2}+leave_D+A_{D4}$
925	n	$S_{An}=S_{An-1}+A_{An}$	$S_{Bn}=\min(S_{Bn-1}+stay_B, S_{An-1})+A_{Bn}$	$S_{Cn}=\min(S_{Cn-1}+stay_C, S_{Bn-1}+leave_B)+A_{Cn}$	$S_{Dn}=\min(S_{Dn-1}+stay_D, S_{cn-1}+leave_C)+A_{Dn}$	$S_{NN}=\min(S_{Nn-1}+stay_M, S_{Mn-1}+leave_M)+A_{Nm}$

Fig. 9

	Frame	810 ("A")	805 ("B")	810 ("C")	815 ("D")	Next Node ("N")
900	0	$S_{AO}=0$	-----	-----	-----	-----
905	1	$S_{A1}=f(S_{AO}, A_{A1})$	$S_{B1}=f(S_{AO}, A_{B1})$	-----	-----	-----
910	2	$S_{A2}=f(S_{A1}, A_{A2})$	$S_{B2}=f(S_{B1}, stay_B, S_{A1}, A_{B2})$	$S_{C2}=f(S_{B1}, leave_B, A_{C2})$	-----	-----
915	3	$S_{A3}=f(S_{A2}, A_{A3})$	$S_{B3}=f(S_{B2}, stay_B, S_{A2}, A_{B3})$	$S_{C3}=f(S_{C2}, stay_C, S_{B2}, leave_B, A_{C3})$	$S_{D3}=f(S_{C2}, leave_C, A_{D3})$	-----
920	4	$S_{A4}=f(S_{A3}, A_{A4})$	$S_{B4}=f(S_{B3}, stay_B, S_{A3}, A_{B4})$	$S_{C4}=f(S_{C3}, stay_C, S_{B3}, leave_B, A_{C4})$	$S_{D4}=f(S_{D3}, stay_D, S_{c3}, leave_C, A_{D4})$	$S_{N4}=f(S_{D3}, leave_D, A_{D3})$
925	n	$S_{An}=f(S_{An-1}, A_{An})$	$S_{Bn}=f(S_{Bn-1}, stay_B, S_{An-1}, A_{Bn})$	$S_{Cn}=f(S_{Cn-1}, stay_C, S_{Bn-1}, leave_B, A_{Cn})$	$S_{Dn}=f(S_{Dn-1}, stay_D, S_{cn-1}, leave_C, A_{Dn})$	$S_{Nn}=f(S_{Dn-1}, leave_N, A_{Nn})$

Fig. 10

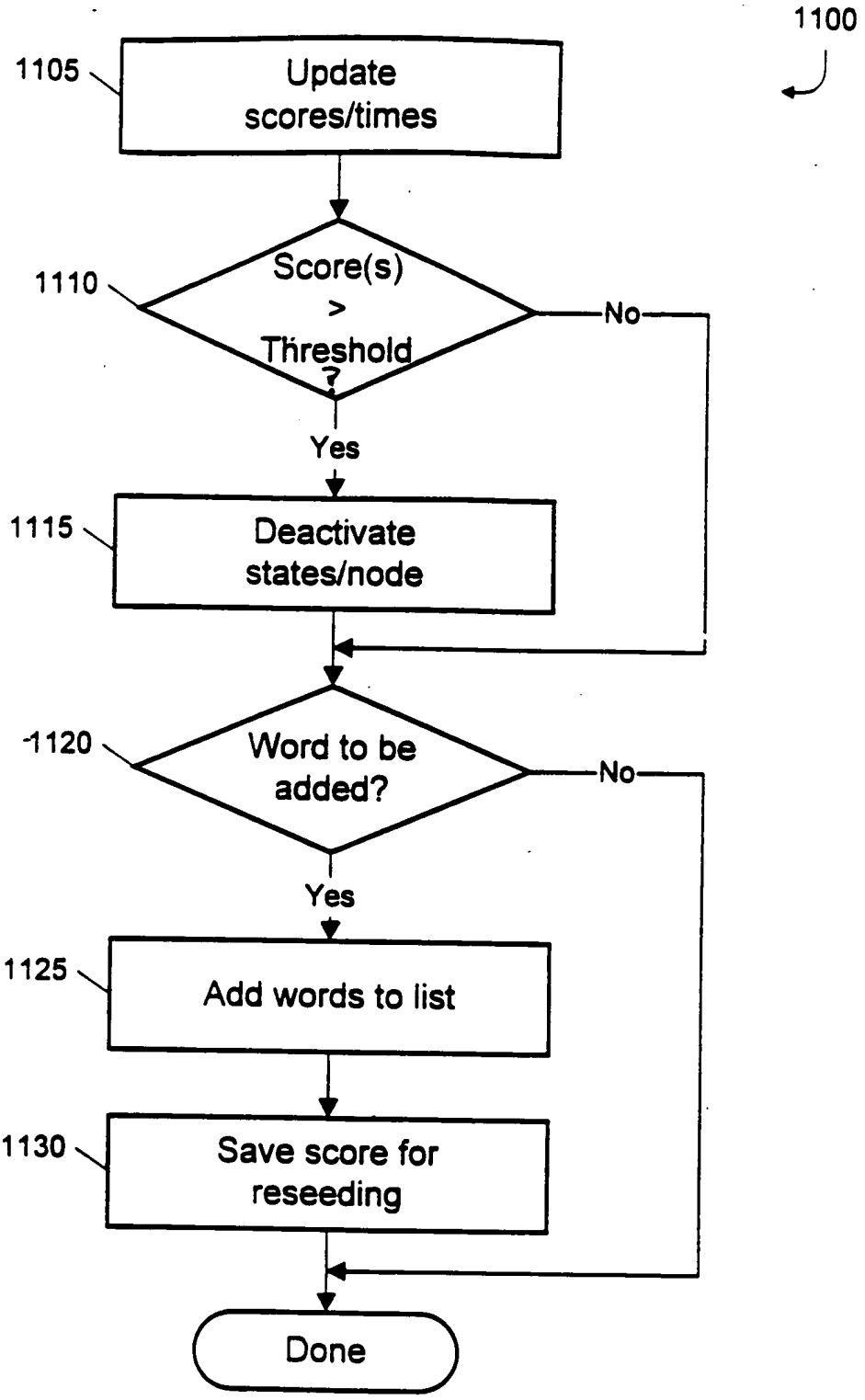

1100
1105
Update scores/times
1110
Score(s) > Threshold ?
No
Yes
1115
Deactivate states/node
1120
Word to be added?
No
Yes
1125
Add words to list
1130
Save score for reseeding
Done

Fig. 11

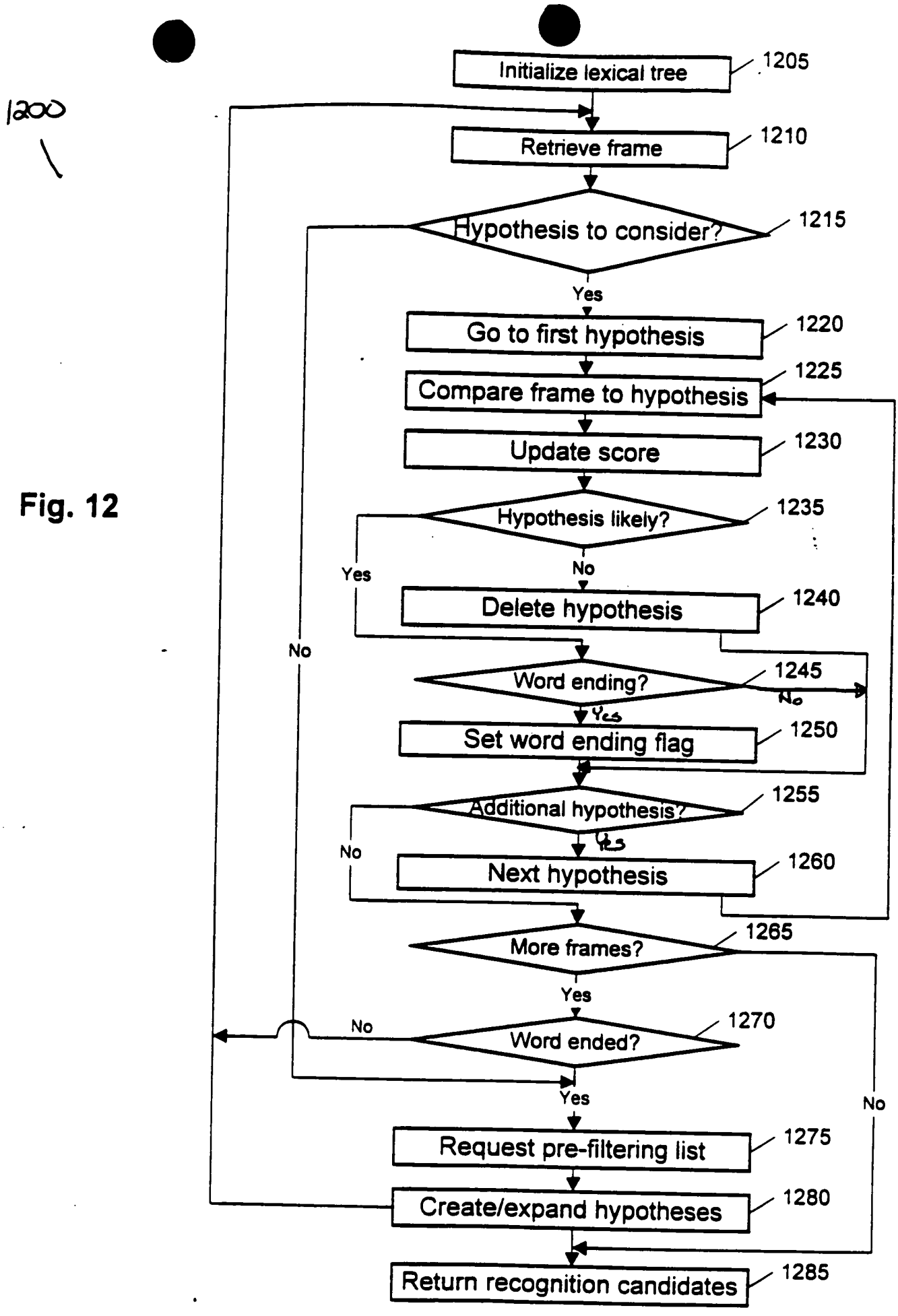


Fig. 12

05605680.1400000

1300 — "When a justice needs a friend New-Paragraph"

1315 — "there are two kinds of legal kibitzers"

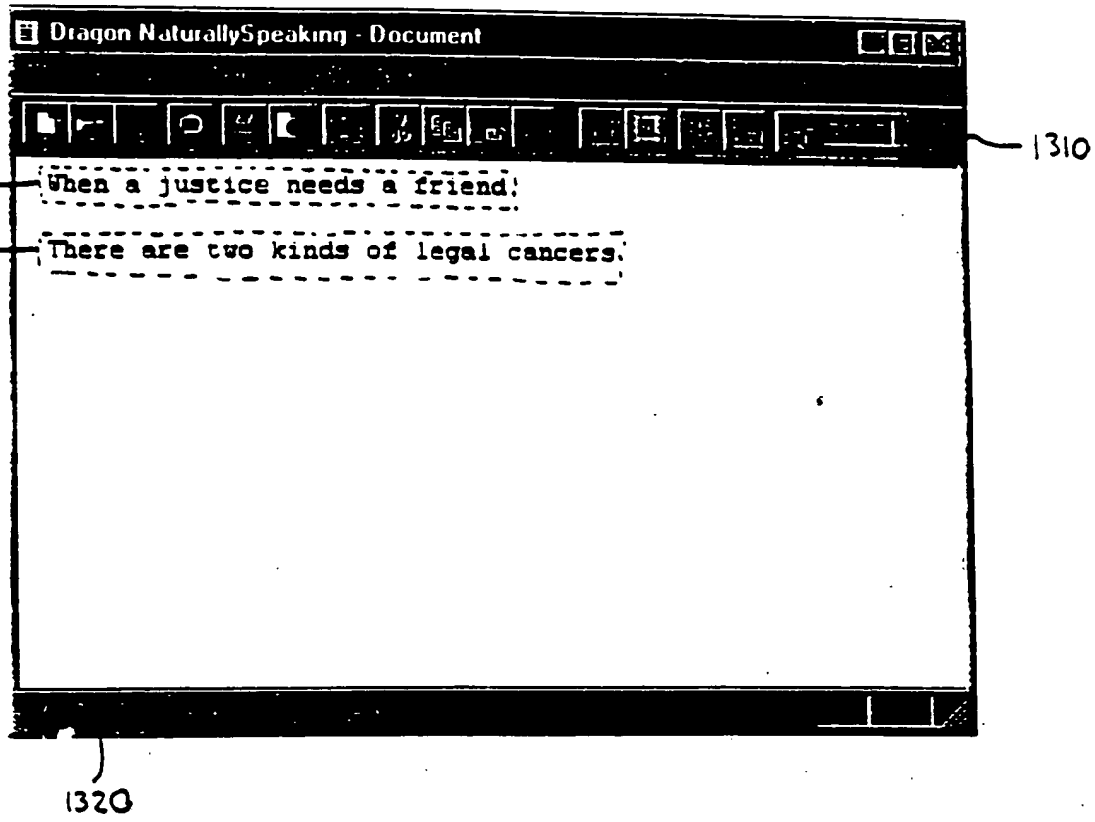


Fig. 13A

select cancers. "Spell That k i b i"

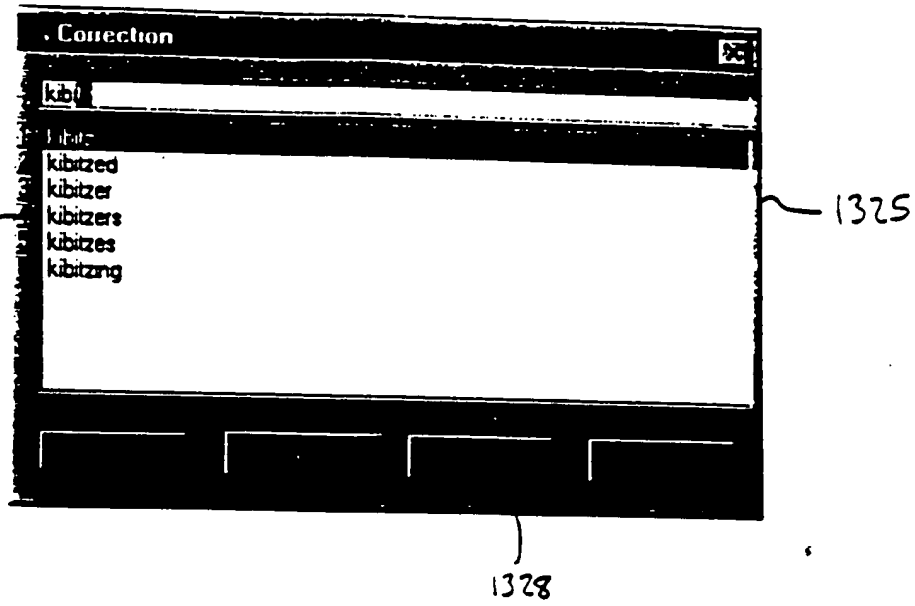


Fig. 13B

05050505-040505

"Choose 4"

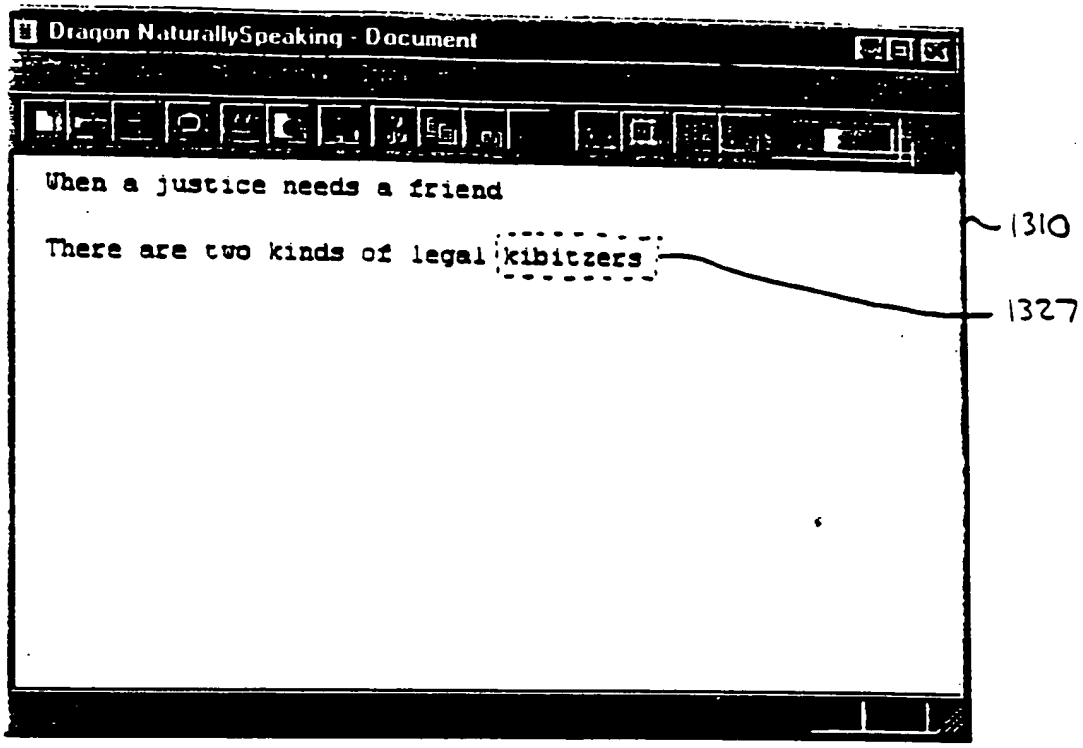


Fig. 13C

1329 "those who pronounce amicus"

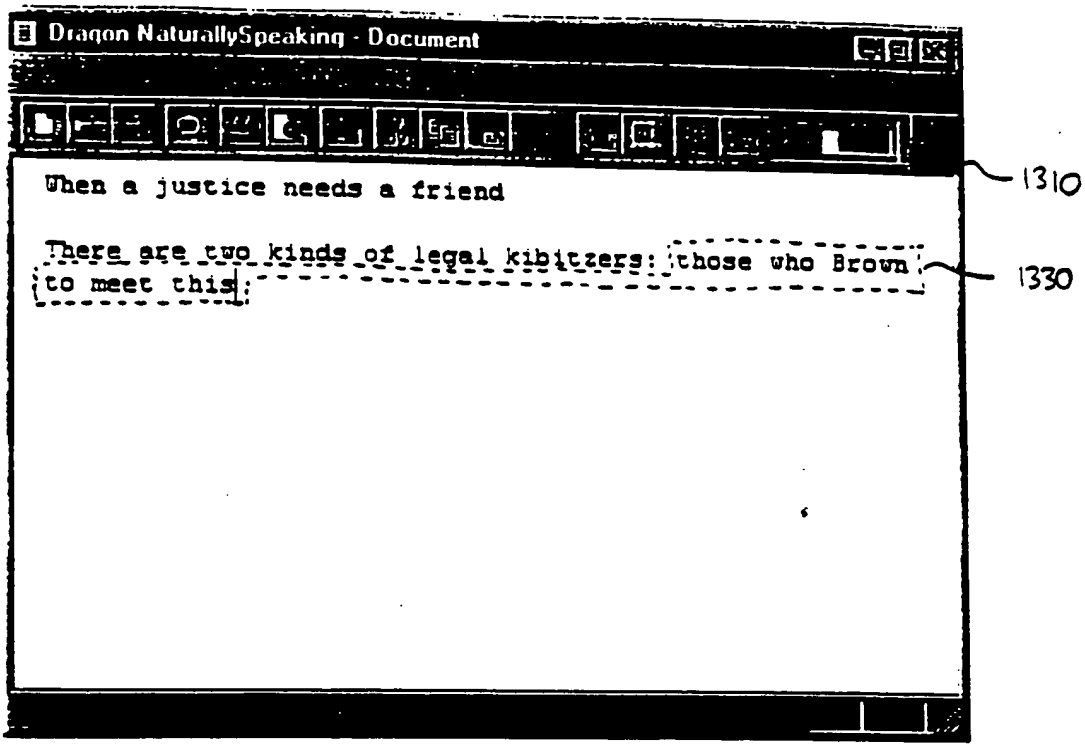


Fig. 13D

Docket No. 4000

1331 "Correct That"

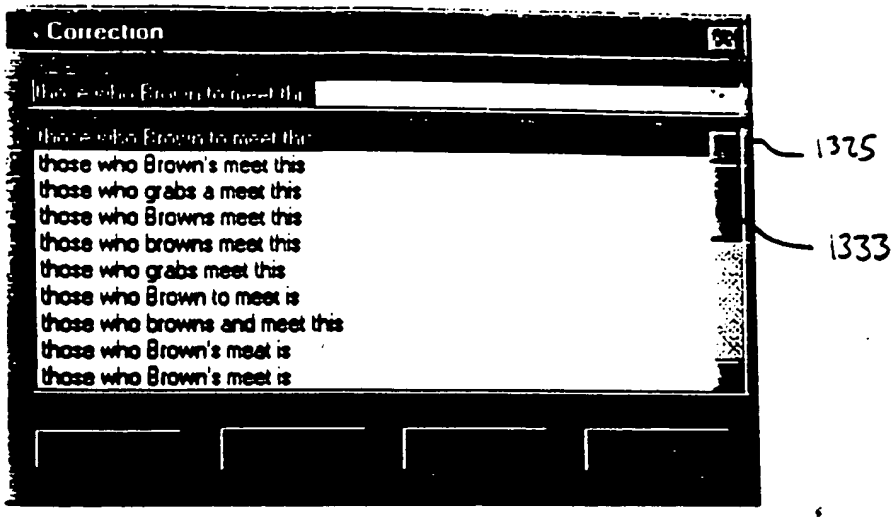


Fig. 13E

Docket No. 1033-0005-000

select "Brown" by mouse

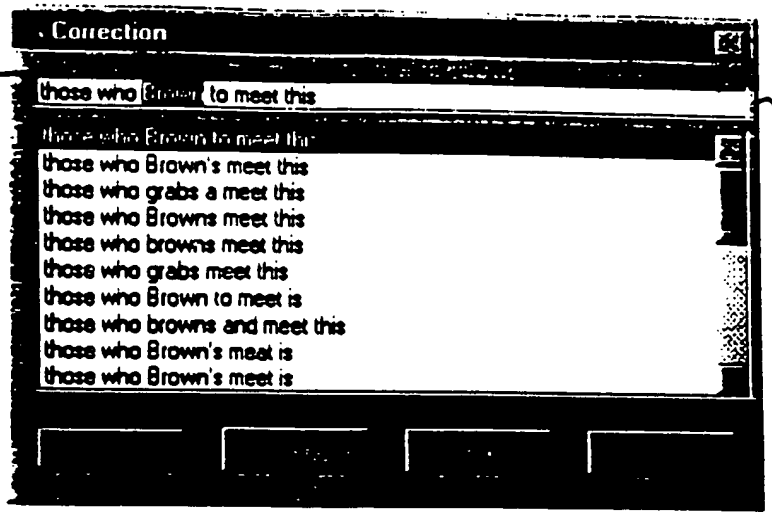


Fig. 13F

09509509 - 040505

1340 "pron"

-- note that every choice ends with "to meet this".

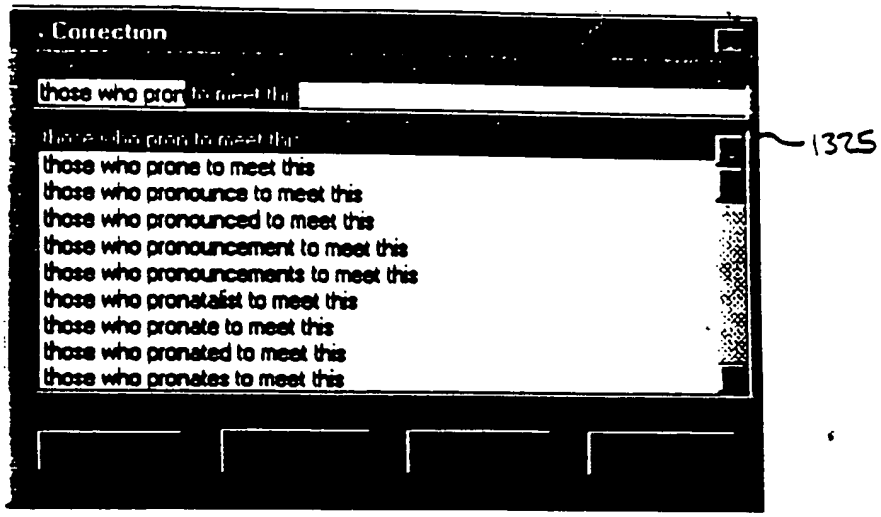


Fig. 136

Docket No. 50277-2000

Click on #3:

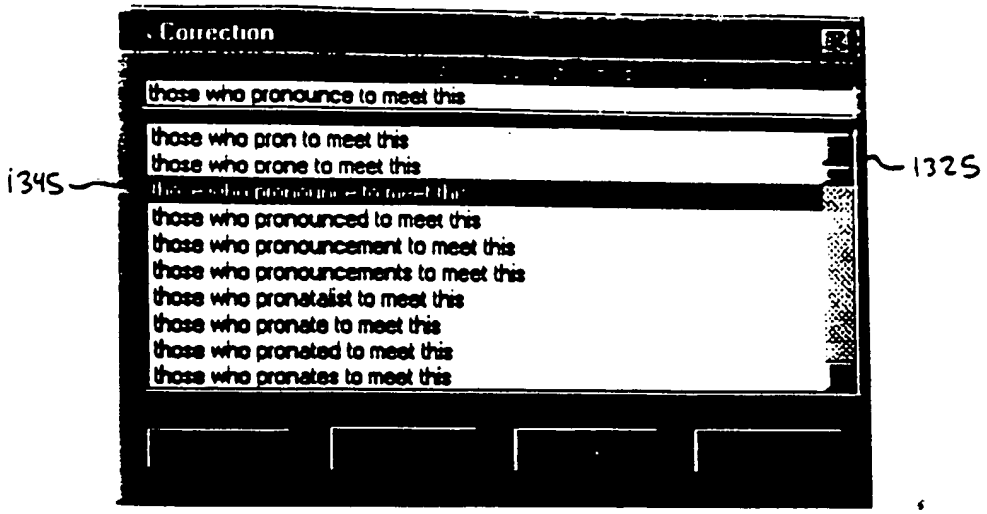


Fig. 13H

5,953,541

select "to meet this" by mouse

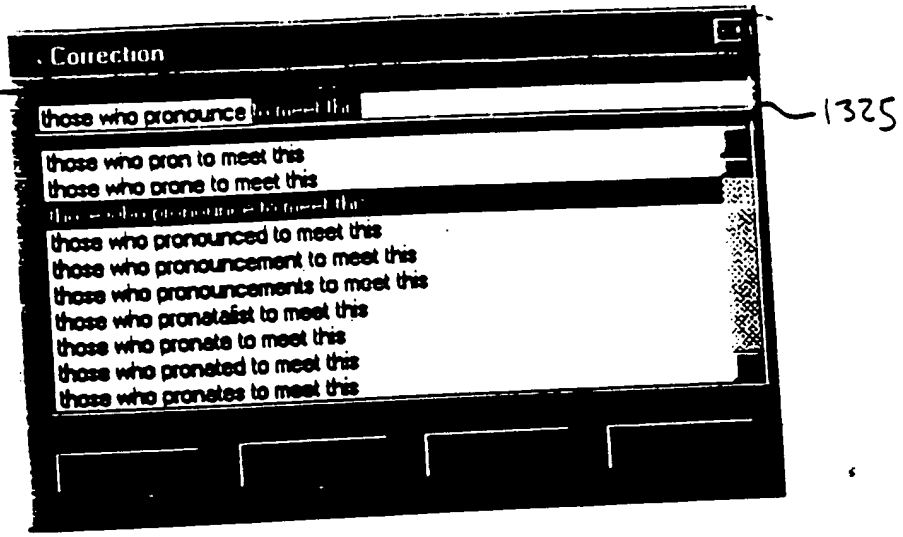


Fig. 13I

09605595 - 040699

type "amicu"

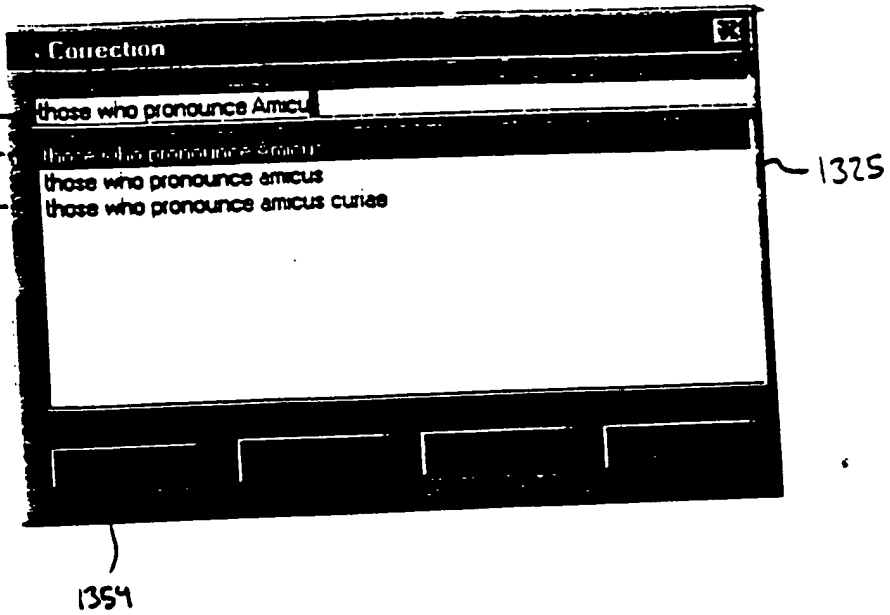


Fig. 13J

Docket No. 50277-2000

Click on OK.

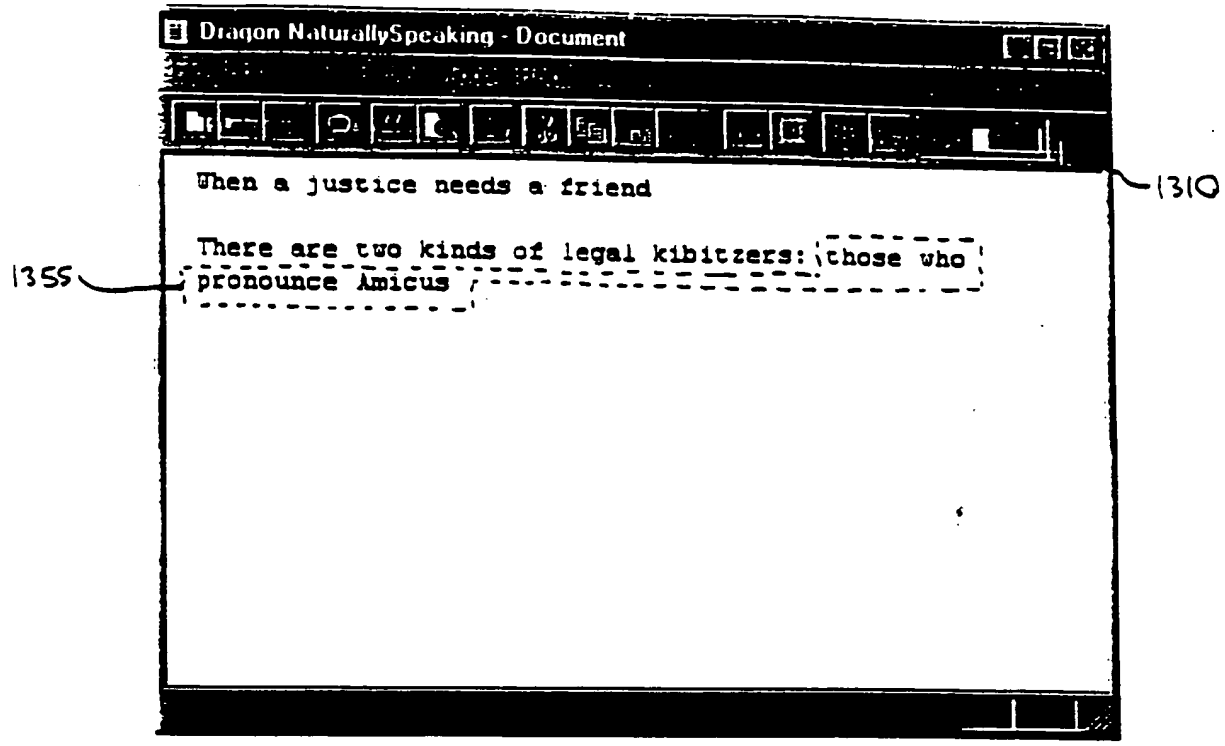


Fig. 13K

1360 — "Each submits a brief as an outsider"

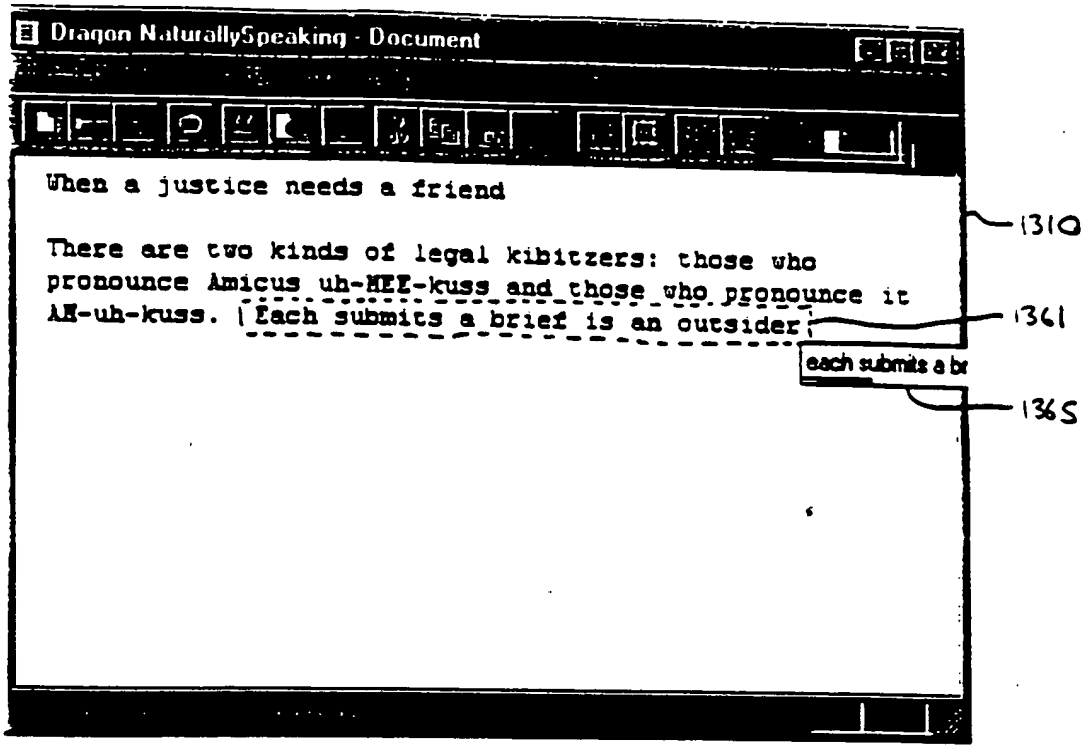


Fig. 13C

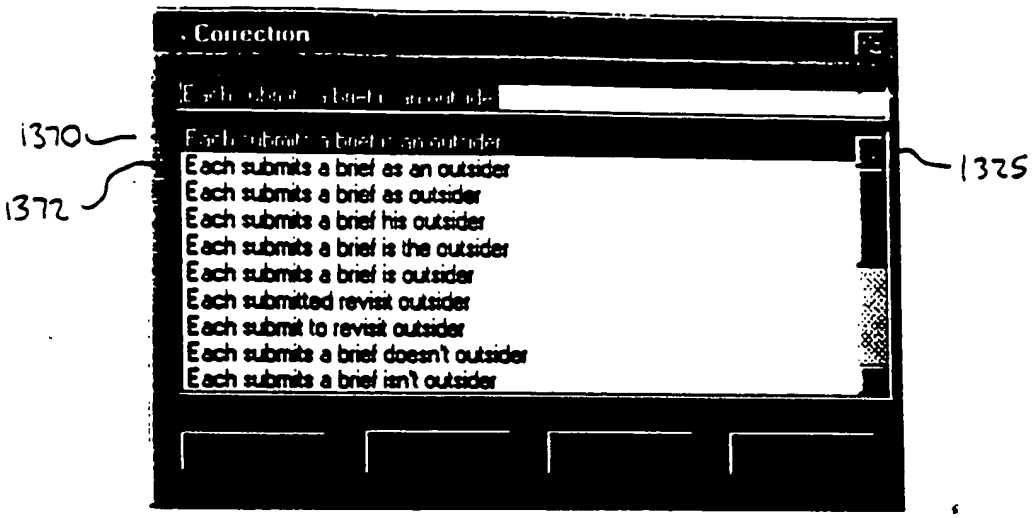


Fig. 13M

Docket No. 74036/P005

"Choose 2"

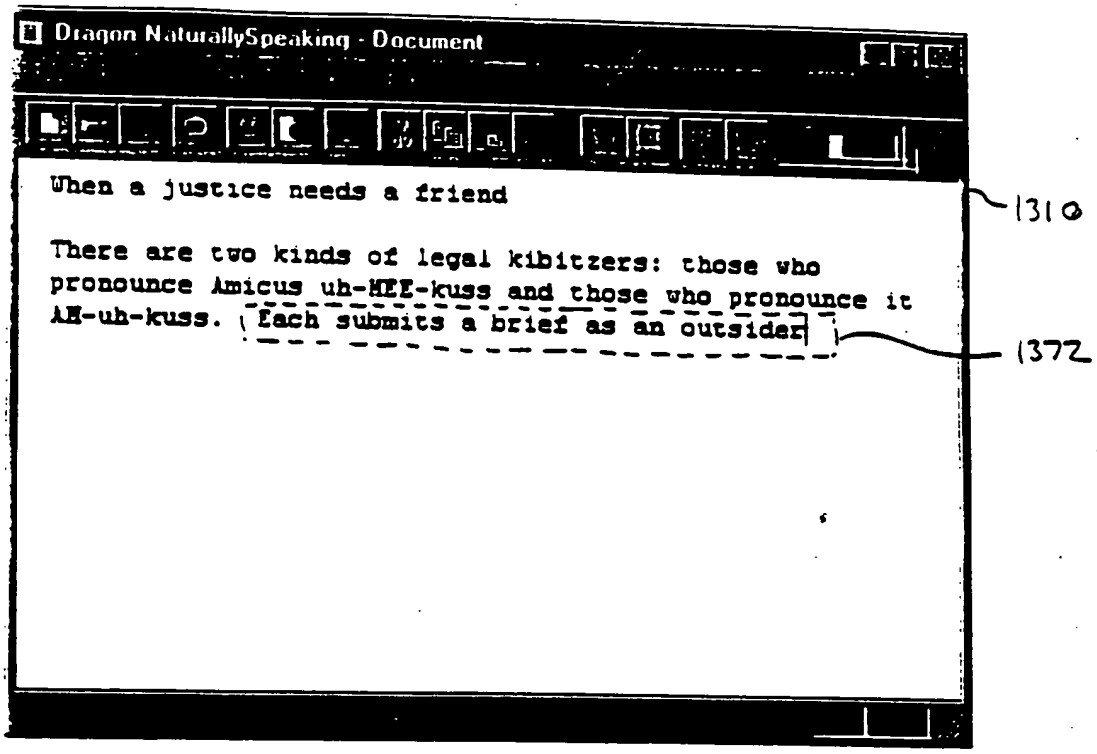


Fig. 13N

09656805-040500

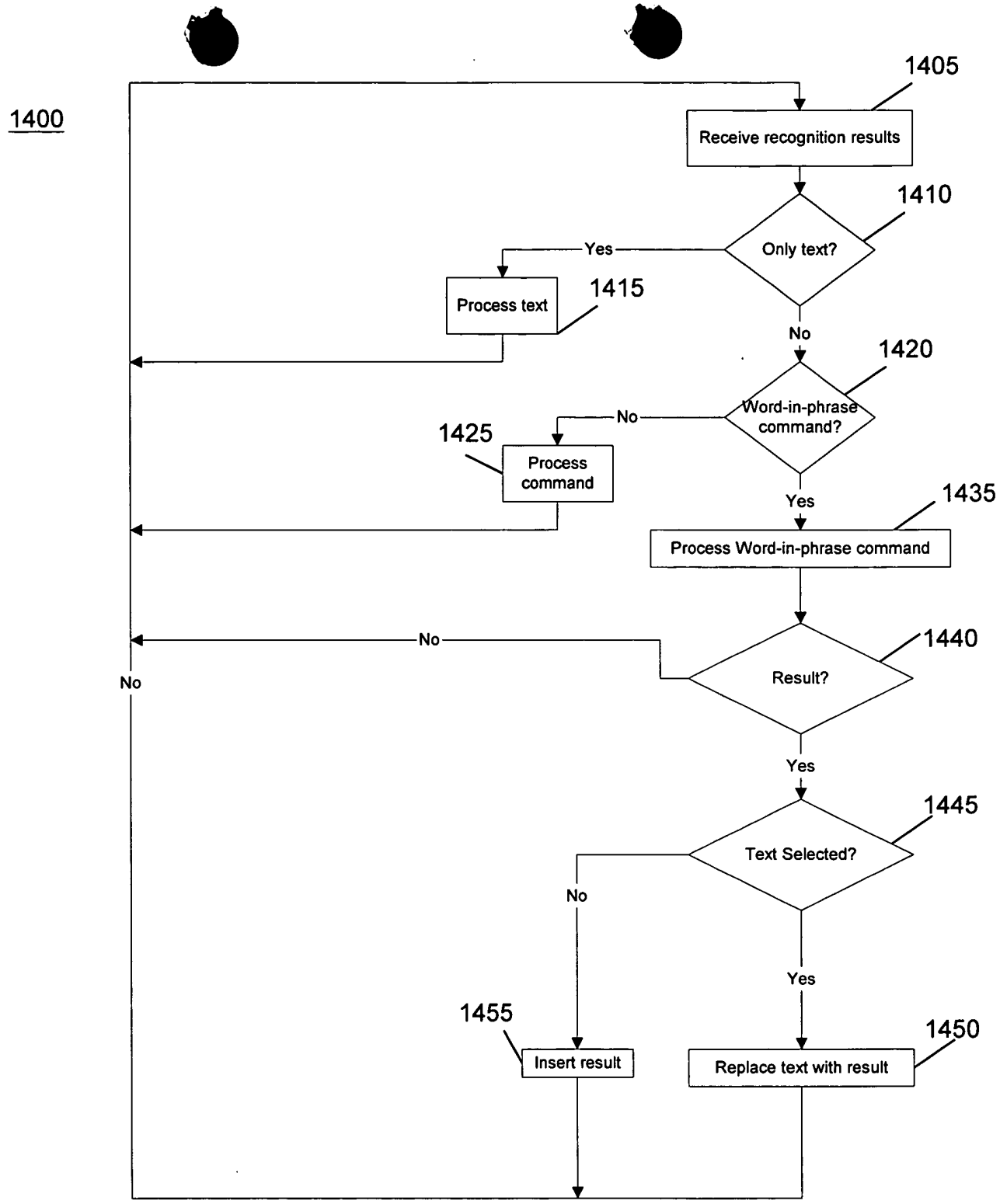

1400
1405
Receive recognition results
1410
Only text?
Yes
Process text
1415
No
1420
Word-in-phrase command?
No
1425
Process command
Yes
1435
Process Word-in-phrase command
No
No
1440
Result?
Yes
1445
Text Selected?
No
Yes
1455
Insert result
1450
Replace text with result

Fig. 14

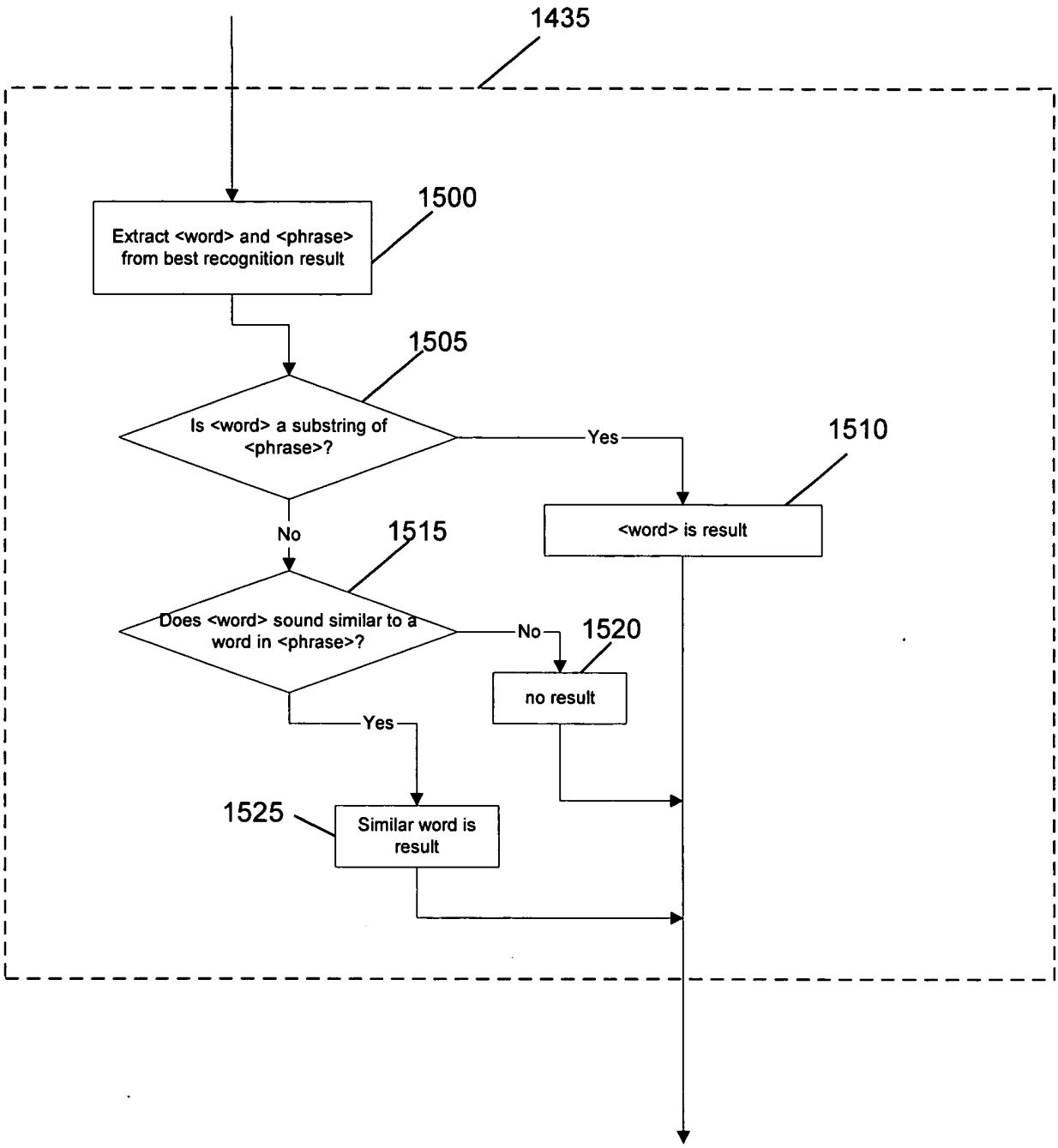

1435
1500
Extract <word> and <phrase> from best recognition result
1505
Is <word> a substring of <phrase>?
Yes
1510
<word> is result
No
1515
Does <word> sound similar to a word in <phrase>?
No
1520
no result
Yes
1525
Similar word is result

Fig. 15